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# Three new species of the millipede family Pyrgodesmidae from Nam Cat Tien National Park, southern Vietnam (Diplopoda: Polydesmida)

# Три новых вида диплопод семейства Pyrgodesmidae из Национального парка Нам-Кат-Тьен (Южный Вьетнам) (Diplopoda: Polydesmida)

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KEY WORDS: Diplopoda, Pyrgodesmidae, taxonomy, new species, Vietnam.
КЛЮЧЕВЫЕ СЛОВА: Diplopoda, Polydesmida, Paradoxosomatidae, таксономия, новые виды, Вьетнам.

ABSTRACT. Three new species of Pyrgodesmidae are being described from a small nature reserve supporting a seasonal tropical forest in southern Vietnam: *Pseudocatapyrgodesmus pulcher* sp.n., *Skotodesmus vietnamicus* sp.n., both representing only the second species in their respective genera, and *Cryptocorypha hoffmani* sp.n., an 11th species in this basically Oriental genus. These new species differ from their respective congeners chiefly in certain minor details of gonopod structure, to a lesser degree through a few peripheral characters as well.

РЕЗЮМЕ. Из небольшого заповедника, охраняющего сезонный тропический лес на юге Вьетнама, описаны три новых вида Pyrgodesmidae: *Pseudocatapyrgodesmus pulcher* sp.n., *Skotodesmus vietnamicus* sp.n., оба — лишь вторые виды в своих родах, и *Cryptocorypha hoffmani* sp.n., 11-й вид в составе этого в основе ориентального рода. Все три новых вида отличаются от остальных видов своих родов прежде всего небольшими деталями строения гоноподов, в меньшей степени и несколькими внешними признаками.

## Introduction

The millipede fauna of Vietnam is still quite poorly-known [Enghoff et al., 2004], at present counting only about 150 species. Of these, the family Pyrgodesmidae contains only two species in two monotypic genera. Our paper puts on record another three pyrgodesmid species, all new and each representing another genus new to the fauna of Vietnam.

All type material, including a sample prepared for scanning electron microscopy (SEM), has been deposited in the collection of the Zoological Museum of the Moscow State University, Moscow, Russia.

### *Pseudocatapyrgodesmus pulcher* sp.n.
Figs 1–8.

MATERIAL. Holotype ♂, Vietnam, Dong nai Prov., Nam Cat Tien National Park, ca 150 m a.s.l., seasonal tropical forest, litter, 15.07.2005, leg. A. Anichkin.

Paratypes: 2 ♀♀, same locality, date and collector, together with holotype; 1 ♂, same locality and collector, 8.–23.11.2005; 1 ♀, same locality and collector, 1.06.2005.

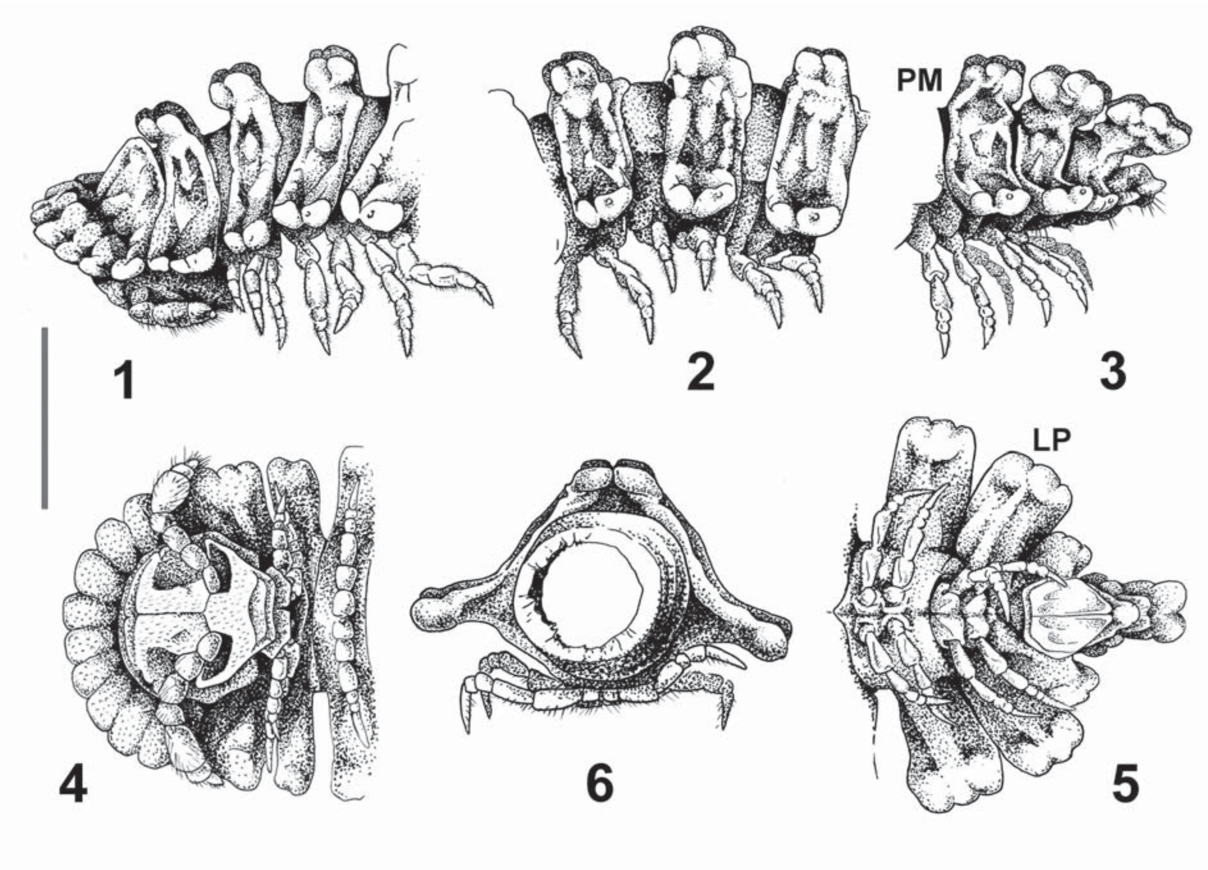
DIAGNOSIS. Differs from the only hitherto known congener, the type species *P. glaucus* Miyosi, 1957, from Honshu, Japan [Miyosi, 1957b], in the collum being regularly convex at the front margin and devoid of distinct tubercles mid-dorsally, in the presence of three lateral lobulations on paraterga 2 and 17–19, and in a clearly less strongly elaborate gonopod, in particular a subflagelliform solenomere.

NAME. To emphasize the beautiful appearance of this new species.

DESCRIPTION. Length ca 5.0 (♂) to 5.5 mm (♀), width of midbody segments 1.0 (♂) to 1.2 mm (♀).

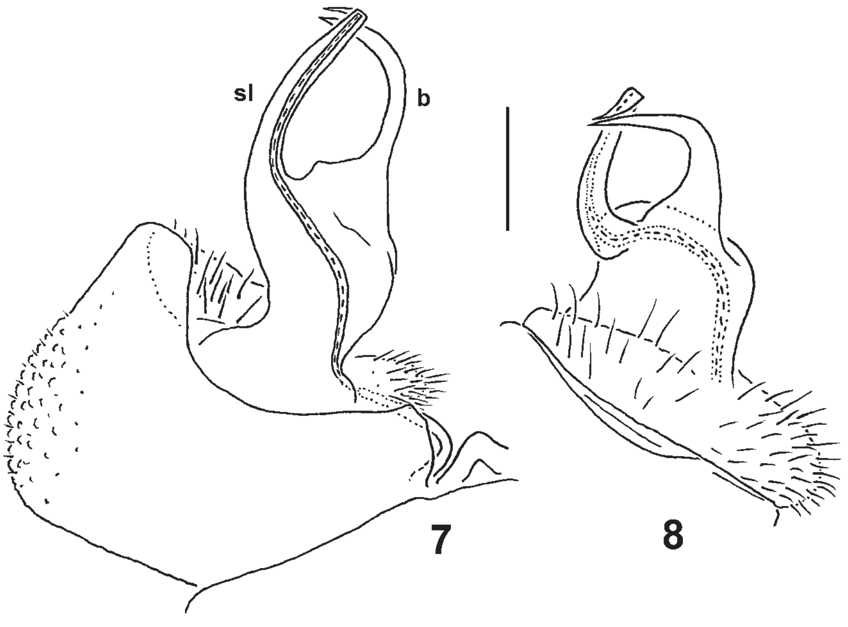
Coloration from uniformly pallid to light grey-brown, only mid-dorsal tubercles on metaterga usually infuscate, dark grey, while both front and caudal edges of metaterga, as well as distal half of epiproct sometimes grey, but then head, venter and legs contrastingly pallid.

Body robust, with 20 segments (♂, ♀). Body width: head << collum < segment 2 < 3 < 4=16, thereafter



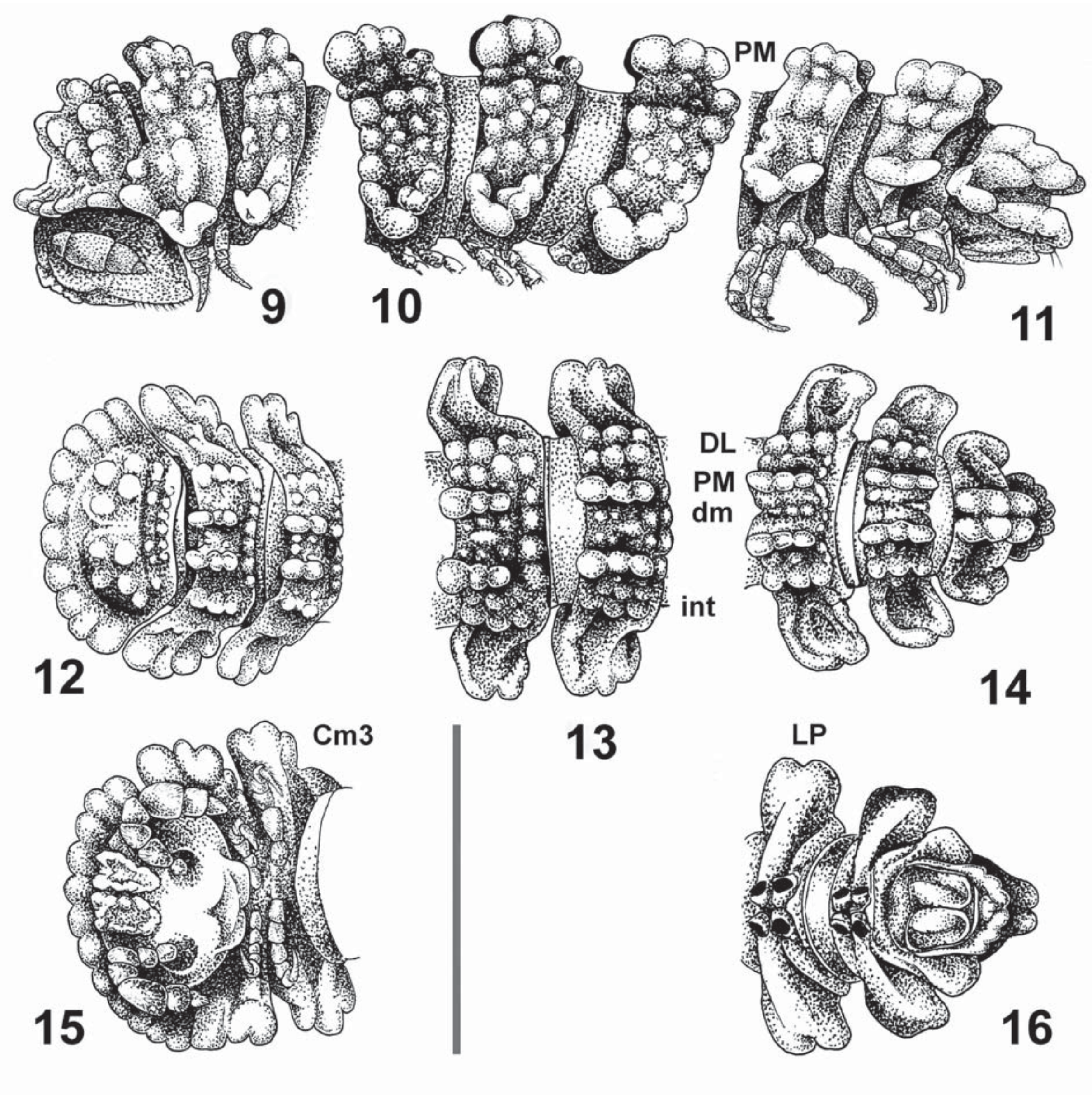

Figs 1–6. *Pseudocatapyrgodesmus pulcher* sp.n., ♂ paratype: 1, 4 — anterior body portion, lateral and ventral views, respectively; 2 — midbody segments, lateral view; 3, 5 — caudal body portion, lateral and ventral views, respectively; 6 — cross-section of a midbody segment, front view. Scale bar 0.1 mm.

Рис. 1–6. *Pseudocatapyrgodesmus pulcher* sp.n., паратип ♂: 1, 4 — передняя часть тела, соответственно сбоку и снизу; 2 — среднетуловищные сегменты, сбоку; 3, 5 — задняя часть тела, соответственно сбоку и снизу; 6 — поперечный разрез через среднетуловищный сегмент, спереди. Масштаб 0,1 мм.




Figs 7–8. *Pseudocatapyrgodesmus pulcher* sp.n., ♂ paratype: 7 — right gonopod, front view; 8 — left gonopod, ventro-caudal view. Scale bar 0.1 mm.

Рис. 7–8. *Pseudocatapyrgodesmus pulcher* sp.n., паратип ♂: 7 — правый гонопод, спереди; 8 — левый гонопод, снизу и сзади. Масштаб 0,1 мм.




Figs 9–16. *Skotodesmus vietnamicus* sp.n., ♂ holotype: 9, 12, 15 — anterior body portion, lateral, dorsal and ventral views, respectively; 10, 13 — midbody segments, lateral and dorsal views, respectively; 11, 14, 16 — caudal body portion, lateral, dorsal and ventral views, respectively. Scale bar 1.0 mm.

Рис. 9–16. *Skotodesmus vietnamicus* sp.n., голотип ♂: 9, 12, 15 — передняя часть тела, соответственно сбоку, сверху и снизу; 10, 13 — среднетуловищные сегменты, соответственно сбоку и сверху; 11, 14, 16 — задняя часть тела, соответственно сбоку, сверху и снизу. Масштаб 1,0 мм.

body rapidly tapering towards telson (Figs 4 & 5). Head ovoid (Fig. 4), slightly transverse, sparsely setose in clypeolabral region, weakly granulate above antennal sockets laterally of an evident epicranial suture. Interantennal isthmus slightly larger than length of antennomere 1. Antennomere 5 largest (Fig. 4). Particularly large/conspicuous groups of sensilla on antennomeres 5 and 6 absent.

Collum (Figs 1 & 4) completely covering head from above, fore margin with 5+5 distinct, equal, moderately incised lobulations; middle virtually smooth. Paraterga low, nearly reaching level of venter, regularly sloping down at about 45° (Figs 1–3 & 6). Dorsum strongly convex, paraterga slightly upturned subhorizontally, evidently concave when continuing outline of dorsum. Tegument encrusted with a microspiculate cerotegument, dull, beset with microvilli. Prozona very delicately alveolate. Metaterga with very clearly differentiated tuberculations: mid-dorsal paramedian tubercles 1+1, very distinctly enlarged, fused, rounded, arranged in two (segments 2–16) or three (segments 17–19, where increasingly well inclined caudad) trans-

verse rows; tubercles below large paramedian ones vague, mostly small, usually grain-shaped, always arranged in three transverse rows of low, line-shaped, regular ridges (Figs 1–3). Paraterga thick, enlarged and rather indistinctly lobulated laterally (Figs 1–5), with three lobulations on segment 2 and all following pore-bearing segments, with two lobulations on following poreless ones; both caudal and front margins of paraterga devoid of lobulations. Ozopore formula normal: 5, 7, 9, 10, 12, 13, 15–19, all pores being very small, round, indistinct and borne on very vague porosteles discernible as/on middle lobulation only on segments 17–19 (Figs 1–3). Limbus microcrenulate, each crenulation extremely finely denticulate/fringed. Epiproct invisible from above, hidden under caudal lobulations of 19th segment (Figs 3 & 5), with four strong setae on top. Hypoproct subtrapeziform, caudal edge with two strong and well-separated setae on knobs and a depression in-between (Fig. 5). Sterna very narrow, coxae nearly contiguous (Figs 4–6). Legs equally short and slightly enlarged in both sexes, tarsi longest. Epigynal ridge behind ♀ legs 2 low and inconspicuous.

Gonopods (Figs 7 & 8) taking up nearly entire ventral surface of metazonum 7, almost reaching bases of paraterga. Coxae voluminous, transverse, microsetose and microgranulate on lateral face, gonocoel very distinct. Telopodites stout, rather simple, biramous, each carrying distally a long, slender, subunciform, medial branch (**b**) and a similarly long, subapically twisted, lateral solenomere (**sl**). Both **sl** and **b** rather strongly exposed.

REMARKS. Following Hoffman's [1976] formula for describing the most typical ornamentation pattern of the metaterga in Pyrgodesmidae, this new species mostly shows only two, not the usual three, larger paramedians (PM1 and PM2, joined by PM3 only on segments 17–19), while smaller medians (md), smaller intercalaries (int), larger dorsolaterals (DL), anterior marginals (Am) and caudal marginals (Cm) are vague or absent; larger paranotals are basically either three (segment 2 and all following pore-bearing segments, of which only paraterga 17–19 show a distinct mediolateral paranotal (LP2) supporting a porostele) or two (remaining poreless segments). In addition, the collum in *P. pulcher* sp.n. bears 5+5 subequal anteromarginal lobulations, the pore formula is normal, and the epiproct is invisible from above, being fully hidden under the overhanging PM2 and PM3 of segment 19. The most similar patterns seem to be observed only in *Catapyrgodesmus ceylonicus* Silvestri, 1920, from Sri Lanka [Silvestri, 1920], and *Pseudocatapyrgodesmus glaucus* [Miyosi, 1957b], both their genera being monobasic. In contrast to *P. pulcher* sp.n., *C. ceylonicus* was described from a single female showing larger mid-dorsal tubercles on the collum, invariably three larger paranotals LP and two PM, and rather distinct porosteles (likewise on LP2) present also on paraterga 5, 7, 9, 10, 12, 13, 15 and 16, not only on paraterga 17–19. Superficially, *P. glaucus* differs from *P. pulcher* sp.n. only in the collum, in which the anterior edge is deeply incised in the middle, while the metatergal surface is supplied with two transverse rows of evident tubercles, as well as in only two, not three, larger paranotals observed also on segments 2 and 17–19. As regards gonopod structure, the telopodite is likewise biramous, but the solenomere in *P. glaucus* is lobe-shaped, opposed by a considerably shorter branch **b**. This similarity in gonopod conformation is the main reason for assigning our new species to *Pseudocatapyrgodesmus*.

*P. pulcher* sp.n. somewhat resembles *Klimakodesmus* Carl, 1932 as well, with two species from southern India [Carl, 1932; Attems, 1940]. Yet the differences seem to be even more profound. In both *K. gravelyi* Carl, 1932 (the type species) and *K. permutatus* Attems, 1940, the collum bears a few very evident tubercles mid-dorsally; all metaterga are either with 2–3 PM and 2–3 LP (*K. permutatus*) or only with two PM and two LP (*K. gravelyi*); porosteles are observed only on segments 5, 7, 9, 10, 12, 13, 15 and 16, being supported by the caudalmost paranotals LP3 or LP2, respectively; ozopores are also present dorsally, yet not borne on porosteles, on paraterga 17–19. What seems especially important, however, is that the gonopod telopodite in *Klimakodesmus* is uniramous, yet also rather strongly elongate and not too much sunken into the gonocoel.

### *Skotodesmus vietnamicus* sp.n.
Figs 9–20.

MATERIAL. Holotype ♂, Vietnam, Dong nai Prov., Nam Cat Tien National Park, ca 150 m a.s.l., seasonal tropical forest, *Dipterocarpus* stand near Dong nai River, litter, 12.2009, leg. A. Tiunov.

DIAGNOSIS. Differs from *S. crepuscularis* Carl, 1932, the only hitherto known congener [Carl, 1932], mostly in the metatergal tubercles PM and DL being more strongly enlarged and arranged in regular transverse rows, in the longer PM on segment 19 which hide the epiproct in dorsal view, in the less slender, subtriangular and simple solenomere, etc. (see also below).

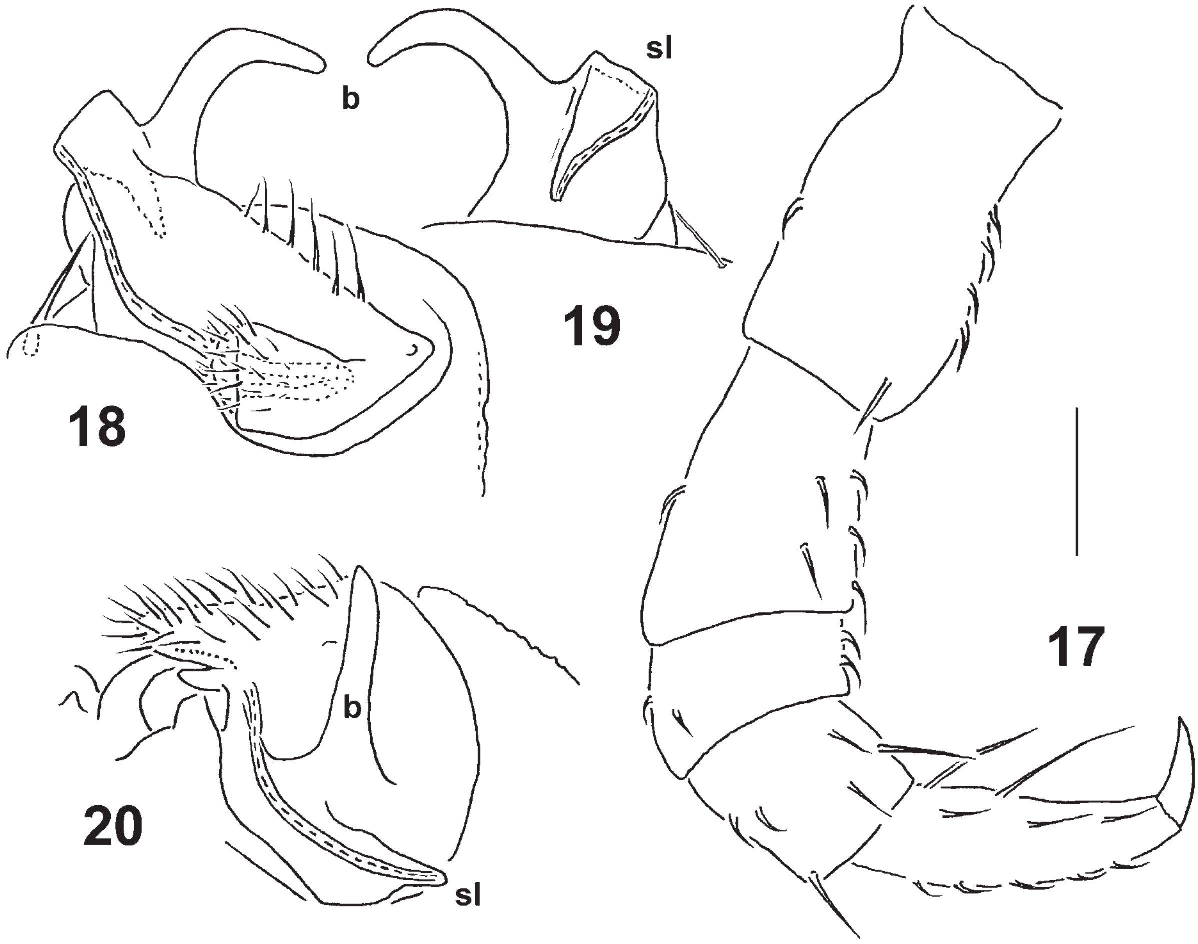
NAME. To reflect the country of origin.

DESCRIPTION. Length ca 6.5 mm, width of midbody segments 0.95 mm.

Coloration very light, metaterga and distal half of epiproct light yellow-brown, remaining parts pallid.

Body robust, with 20 segments (♂). Body width: head << collum = segment 3 = 4 < 2 = 5=16, thereafter body gradually tapering towards telson (Figs 11, 14 & 16). Head ovoid (Fig. 15), slightly transverse, sparsely setose in clypeolabral region, evidently granulate above antennal sockets laterally of an evident epicranial suture. Interantennal isthmus considerably larger than length of antennomere 1. Antennomere 5 largest (Figs 9 & 15). Particularly large/conspicuous groups of sensilla on antennomeres 5 and 6 absent.

Collum (Figs 9 & 12) completely covering head from above, fore margin with 5+5 distinct, subequal, moderately incised, rounded lobulations; middle with two rows of larger and a subcaudal row of smaller tubercles. Paraterga low, nearly reaching level of venter, regularly sloping down at about 45° (Figs 9–14).



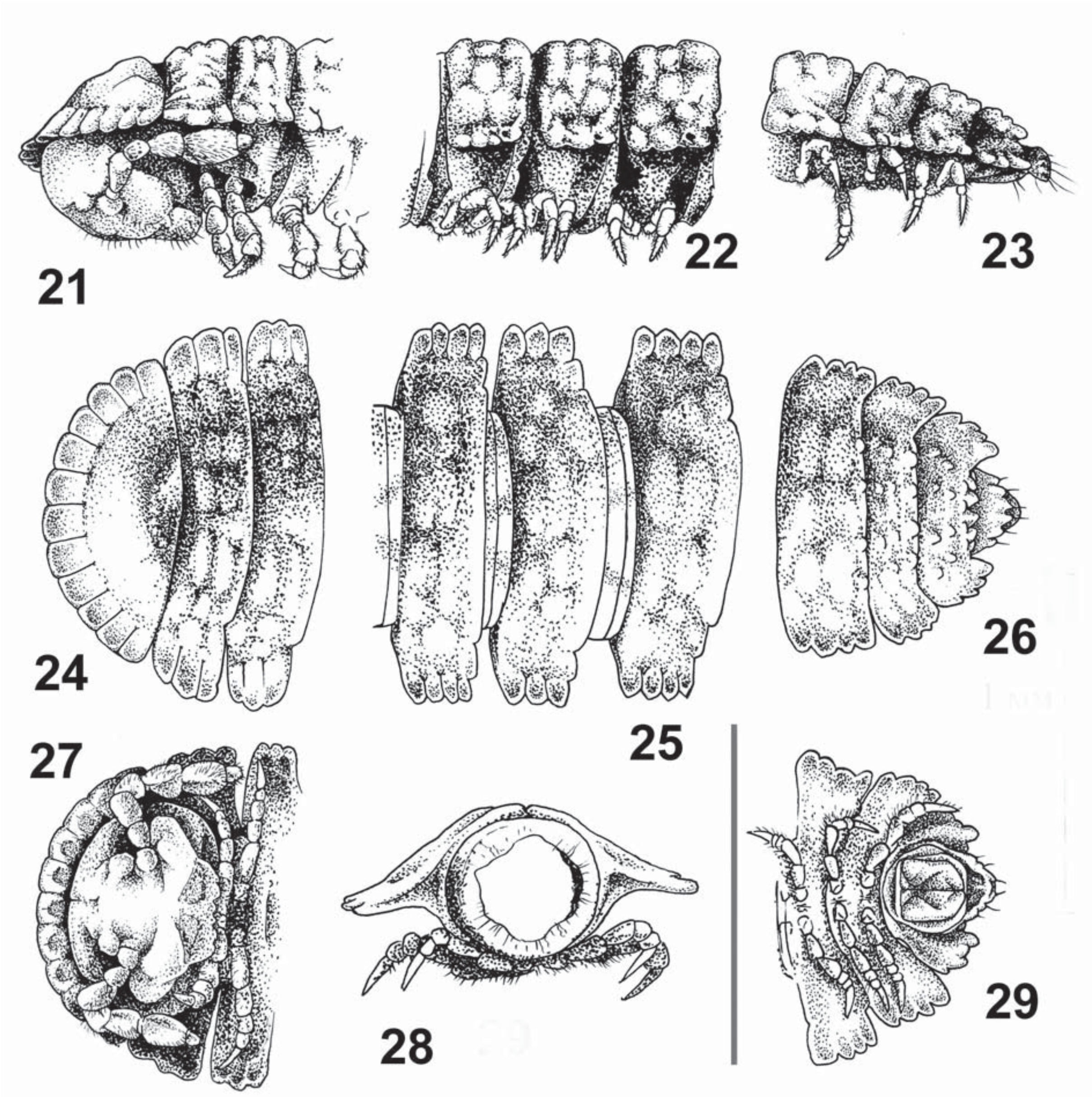

Figs 17–20. *Skotodesmus vietnamicus* sp.n., ♂ holotype: 17 — leg 9; 18, 19 — left gonopod, front and caudal views, respectively; 20 — right gonopod, ventral view. Scale bar 0.1 mm.

Рис. 17–20. *Skotodesmus vietnamicus* sp.n., голотип ♂. 17 — нога 9; 18, 19 — левый гонопод, соответственно спереди и сзади; 20 — правый гонопод, снизу. Масштаб 0,1мм.

Dorsum strongly convex, paraterga slightly upturned subhorizontally, evidently concave when continuing outline of dorsum. Tegument encrusted with a microspiculate cerotegument, dull, beset with microvilli. Prozona very delicately alveolate. Metaterga with rather typically differentiated tuberculations arranged in three transverse rows [Hoffman, 1976]: 1+1, small, mid-dorsal tubercles (md); very distinctly enlarged, fused, rounded paramedians (PM) (increasingly well inclined caudad on segment 19); basically two rows of smaller intercalaries (int); and one transverse rows of larger dorsolaterals (DL). Anterior marginals (Am) and most of caudal marginals (Cm) vague or absent, only Cm3 rather evident; lateral paranotals (LP) basically three (segment 2 and following pore-bearing ones except for 17–19) or two (remaining segments), middle paranotals (LP2) supporting a small porostele (Figs 9–16). Ozopore formula nearly normal: 5, 7, 9, 10, 12, 13, 15 & 16, onward pores missing, all pores being very small, round and indistinct. Limbus microcrenulate, each crenulation extremely finely denticulate/fringed, surmounted by a microtubercle/grain. Epiproct invisible from above, hidden under caudal lobulations of 19$^{th}$ segment (Figs 11, 14 & 16), with four strong setae on top. Hypoproct triangular, caudal edge with two strong and well-separated setae on knobs (Fig. 16). Sterna very narrow, coxae nearly contiguous (Figs 15 & 16). Legs short, stout and enlarged, tarsi longest, only a little longer than prefemora (Fig. 17).

Gonopods (Figs 18–20) taking up nearly entire ventral surface of metazonum 7, almost reaching bases of paraterga. Coxae voluminous, transverse, microsetose and microgranulate on lateral face, gonocoel very distinct. Telopodites very stout, rather simple, biramous, each carrying distally a short, subtriangular, subunciform, medial solenomere (**sl**) and a longer, digitiform, simple, lateral branch (**b**).

REMARKS. The genus *Skotodesmus* Carl, 1932 has heretofore been known to comprise the only, and type, species *S. crepuscularis* Carl, 1932, with two varieties from southern India [Carl, 1932]. It shares with *S. vietnamicus* sp.n. most of the basic elements of




Figs 21–29. *Cryptocorypha hoffmani* sp.n., ♂ paratype: 21, 25, 27 — anterior body portion, lateral, dorsal and ventral views, respectively; 22, 25 — midbody segments, lateral and dorsal views, respectively; 23, 26, 29 — caudal body portion, lateral, dorsal and ventral views, respectively; 28 — cross-section of a midbody segment, front view. Scale bar 1.0 mm.

Рис. 21–29. *Cryptocorypha hoffmani* sp.n., паратип ♂: 21, 25, 27 — передняя часть тела, соответственно сбоку, сверху и снизу; 22, 25 — среднетуловищные сегменты, соответственно сбоку и сверху; 23, 26, 29 — задняя часть тела, соответственно сбоку, сверху и снизу; 28 — поперечный разрез через среднетуловищный сегмент, спереди. Масштаб 1,0 мм.

metatergal ornamentation: the collum is with 5+5 subequal and moderately deeply incised lobulations at a regularly convex front margin, as well as with distinct tubercles mid-dorsally; the metaterga are with typical and clearly differentiated md, PM, int, DL and Cm (of which Cm3 is the most evident), and there are three LP only on paraterga 2 and the following pore-bearing ones except for segments 17–19, with LP2 on the pore-bearing segments supporting a small porostele. The most striking similarity, however, lies in the gonopod telopodite being biramous, with both **sl** and **b** being rather well exposed beyond the coxae.

*S. crepuscularis* differs largely in the metatergal tubercles PM and DL being smaller and arranged in far less regular, albeit mostly also three, transverse rows; in the poreless paraterga following the 2$^{nd}$ being not bi-, but also trilobate laterally, like are most of the pore-bearing segments; in the shorter PM tubercles on segment 19 which fail to hide the epiproct from above; and in the slenderer, apically flagelliform solenomere

which both is supplied with a peculiar, partly dendroid trichome and opposed by a slightly bifid lateral branch [Carl, 1932].

*Cryptocorypha hoffmani* **sp.n.**
Figs 21–44.

MATERIAL. Holotype ♂, Vietnam, Dong nai Prov., Nam Cat Tien National Park, ca 150 m a.s.l., seasonal tropical forest, litter, 1.06.2005, leg. A. Anichkin.

Paratypes: 3 ♂♂, 1 ♂ (SEM), 2 ♀♀, same locality, date and collector, together with holotype.

DIAGNOSIS. Differs from congeners in the small size (only 1.0–1.2 mm in width, which is among the smallest in the genus), coupled with the rather simple gonopods, in which the prefemoral part is sack-shaped, rounded and low, devoid of any evident outgrowths distally, nearly level to the ventrolateral edge of the coxa, and only slightly surpassed in length by a finger-shaped, finely tuberculate, slightly curved and apically subtruncate solenomere; the latter is fully devoid of any processes at its base.

NAME. Honours Richard L. Hoffman, the outstanding specialist in Diplopoda.

DESCRIPTION. Length ca 4.0–4.5 mm, width of midbody segments 0.85–0.95 mm (♂, ♀).

Coloration from uniformly light pinkish (live material) to pallid, fully faded in alcohol.

Body robust, with 20 segments (♂, ♀). Body width: head << collum < segment 2 < 3 ≤ 4=15(16), thereafter body rapidly tapering towards telson (Figs 21–33). Head ovoid (Figs 27, 33 & 34), slightly transverse, densely setose in clypeolabral region, weakly granulate above antennal sockets laterally of a rather superficial epicranial suture. Interantennal isthmus about twice as large as length of antennomere 1. Antennomere 6 largest (Figs 27, 33 & 34). Particularly large/conspicuous groups of sensilla on antennomeres 5 and 6 absent.

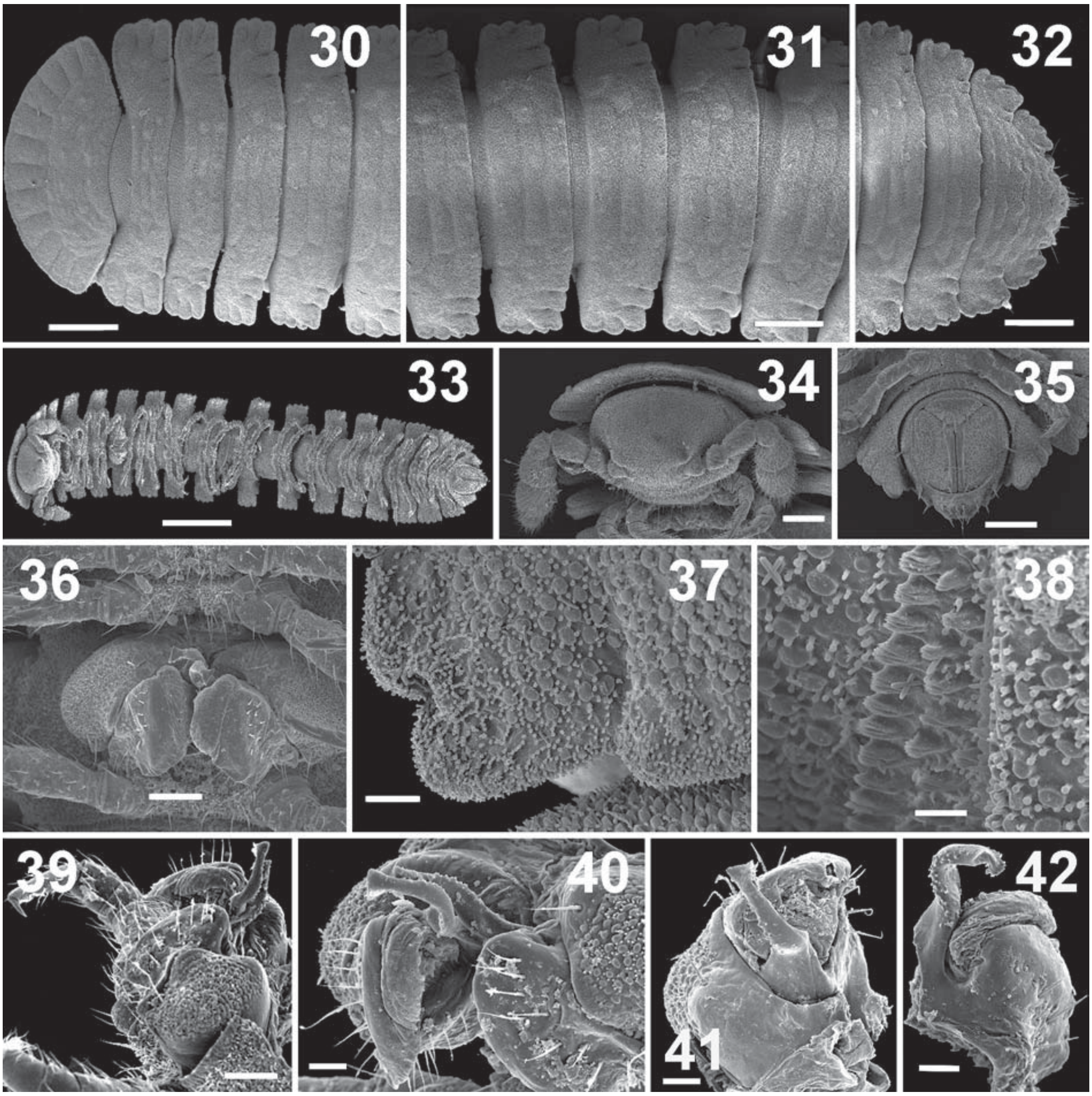
Collum (Figs 21, 24, 27, 30 & 34) completely covering head from above, fore margin with 6+6 distinct, subequal, only slightly incised lobulations; middle and caudal parts with three transverse, arched, indistinct rows of low and vague bosses, each of these surmounted by a minute knob (= insertion point of an abraded seta?). Paraterga set relatively high, lying at about midbody height, moderately sloping down at about 20° (Figs 21–23 & 28). Dorsum evidently convex, paraterga regularly continuing its outline. Tegument encrusted with a microspiculate cerotegument, dull, beset with microvilli (Figs 37 & 38). Prozona very delicately alveolate. Metaterga with non-differentiated tuberculations, like much of collum with three indistinct and transverse rows of usually transversely oblong, polygonal to rounded, low bosses, each of these often also surmounted by a minute knob (Figs 21–26, 30–32). Paraterga thin and rather indistinctly lobulated laterally (Figs 21–35), with three lobulations on all poreless segments and with four lobulations on all pore-bearing ones; front marginals absent, only Cm2 and/or Cm3 evident among caudal marginals. Ozopore formula normal: 5, 7, 9, 10, 12, 13, 15–19, all pores being very small, round, indistinct, discernible dorsally at base of 3$^{rd}$ lobulation (Figs 30–32). Limbus microcrenulate, each crenulation extremely finely denticulate/fringed (Fig.38). Epiproct readily visible from above, not hidden under 19$^{th}$ segment (Figs 23, 26, 29, 32 & 35), with four strong setae on top. Hypoproct subtriangular, caudal edge with two strong and well-separated setae on knobs (Figs 29 & 35). Sterna not particularly narrow, nearly as broad as coxa (Figs 29 & 33). Legs equally short and slightly enlarged in both sexes, tarsi longest; last tibia simple, devoid of a distodorsal tubercle. Epigynal ridge behind ♀ legs 2 low and inconspicuous.

Gonopods (Figs 36 & 39–44) taking up much of ventral surface of metazonum 7, almost reaching bases of paraterga (Fig. 33). Coxae voluminous, transverse, with two strong setae and microgranulate on lateral face, gonocoel very distinct. Telopodites stout, deeply sunken in gonocoel, each telopodite being mostly represented by a sack-shaped, strongly setose, prefemoral part and a short, digitiform, slightly curved, microdentate, subtruncate solenomere (**sl**).

REMARKS. The genus *Cryptocorypha* Attems, 1907 has hitherto been known to comprise the following ten species: *C. stylopus* Attems, 1907 (the type species) and *C. leia* Chamberlin, 1945, both from Java, *C. tobana* Chamberlin, 1945, from Sumatra, *C. ornata* (Attems, 1938), nearly pantropical, especially characteristic of remote archipelagos, *C. areata* (Carl, 1932) and *C. tuberculata* (Carl, 1932), both from southern India, *C. kandyana* (Carl, 1932), from Sri Lanka, *C. spinicoronata* (Zhang & Li, 1981), from southern China, *C. japonica* (Miyosi, 1957) and *C. kumamotensis* (Murakami, 1966), from southern Honshu and Kyushu, Japan, respectively [Attems, 1907, 1940; Carl, 1932; Chamberlin, 1945; Miyosi, 1957a; Murakami, 1966; Zhang & Li, 1981]. The relevant synonymy concerning the genus, as well as some remarks on several constituent or related species are available in Hoffman [1977, 1980], while an update of the faunistic records of *C. ornata* in Adis et al. [1998].

At the moment, even a provisional key to all eleven species of *Cryptocorypha* cannot be compiled, based on the literature alone. To begin with, some descriptions are too poor to be of any real value. Thus, we still do not know even the number of body segments in the ♂ of both *C. leia* and *C. tobana* [Chamberlin, 1945]. Most of the *Cryptocorypha* species have adult ♂♂ and ♀♀ with 20 body segments, but at least the ♂ of *C. stylopus* shows them 19, as opposed to 20 in the ♀. Considering that *C. leia* stems from Java as well, relevant type material of this and several other species must be revised before a useful key could be attempted.

ACKNOWLEDGEMENTS. We are most grateful to the Russian-Vietnamese Tropical Centre, Hochiminh City, Vietnam, for the support rendered to SIG, IIS and AEA for field studies on soil fauna of Nam Cat Tien National Park, Vietnam. In addition, A.V. Tiunov, Moscow, Russia, kindly handed us his valuable material for treatment.




Figs 30–42. *Cryptocorypha hoffmani* sp.n., ♂ paratype, SEM: 30 — anterior body portion, dorsal view; 31 — midbody segments, dorsal view; 32, 35 — caudal body portion, dorsal and ventral views, respectively; 33 — habitus, ventral view; 34 — head, front view; 36, 39, 40 — both gonopods *in situ*, ventral, sublateral and ventrolateral views, respectively; 37 — paranotals LP3 and LP4 with ozopore in-between, and caudomarginal CP3, dorsal view; 38 — tergal texture; 41 — left gonopod, frontoventral view; 42 — right gonopod, subcaudal view. Scale bars: 0.5 (33), 0.2 (30–32), 0.1 (34, 35), 0.05 (36, 39), 0.02 (37, 40–42) and 0.01 mm (38).

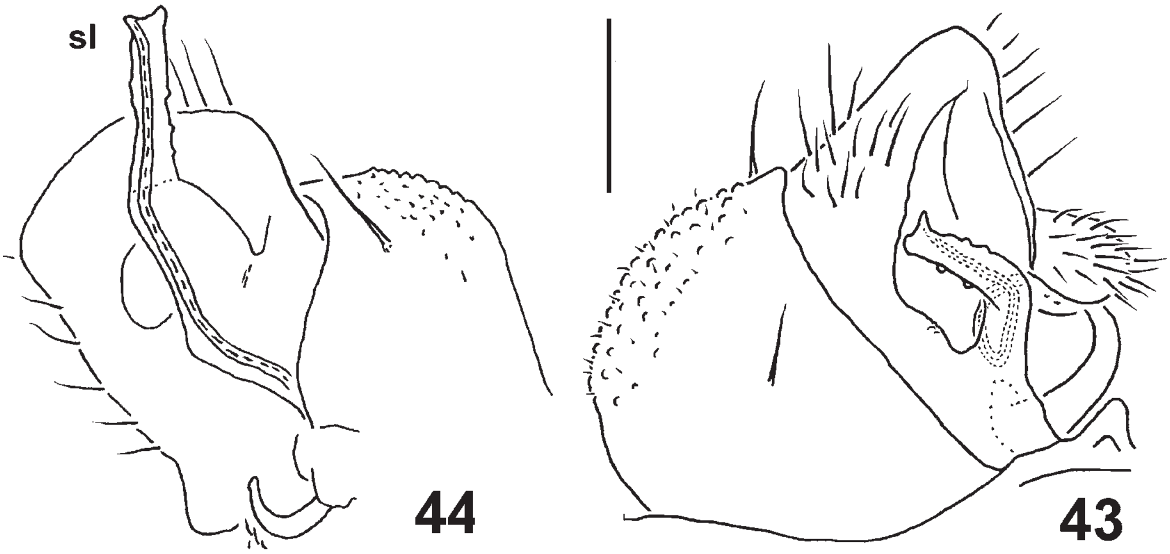
Рис. 30–42. *Cryptocorypha hoffmani* sp.n., паратип ♂, SEM: 30 — передняя часть тела, сверху; 31 — среднетуловищные сегменты, сверху; 32 и 35 — задняя часть тела, соответственно сверху и снизу; 33 — общий вид, снизу; 34 — голова, спереди; 36, 39 и 40 — оба гонопода на месте, соответственно снизу, почти сбоку и одновременно сбоку и снизу; 37 — паранотали LP3 и LP4 с озопорой между ними, а также каудомаргиналь CP3, сверху; 38 — текстура тергитов; 41 — левый гонопод, одновременно спереди и снизу; 42 — правый гонопод, почти сзади. Масштаб 0,5 (33), 0,2 (30–32), 0,1 (34, 35), 0,05 (36, 39), 0,02 (37, 40–42) и 0,01 мм (38).

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Figs 43–44. *Cryptocorypha hoffmani* sp.n., ♂ paratype: 43 — left gonopod, front view; 44 — right gonopod, mesal view. Scale bar 0.1 mm.

Рис. 43–44. *Cryptocorypha hoffmani* sp.n., паратип ♂: 43 — левый гонопод, спереди; 44 — правый гонопод, изнутри. Масштаб 0,1 мм.

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